

MANDREL CONSTRUCTION FOR PAINT ROLLER

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to an improvement in paint roller assemblies.

2. Brief Description of the Prior Art

Paint roller assemblies incorporating a handle, an offset rodlike connecting member terminating in a transversely extending axle with mandrel means thereon for supporting a replacement sleeve-like roller cover are well known in the art. Generally speaking, the replacement roller cover is held onto the mandrel for rotation therewith by means of frictional retention exerted against the interior of the roller cover core. Sometimes the force of this frictional retention is difficult to overcome when removing the roller cover or replacing a new roller cover on the mandrel construction. This difficulty is made more problematical when the roller cover being removed contains a quantity of paint and it is desirable to either dispose of the roller cover or clean the same. In this event, the user may have to grasp the sleeve-like roller cover itself and thus may transfer a considerable amount of paint to his hands or the like during the extraction effort.

This specific invention is directed to fulfilling a need and desire for providing a simplified means for roller cover removal and the subject matter of the invention is directed to a two-part mandrel construction, one of which includes resilient finger portions which bear against the interior of a roller cover sleeve. In this connection, it is believed that the most pertinent prior art known to the applicants includes Wiegand U.S. Pat. No. 2,977,671 and Schueler U.S. Pat. No. 3,119,137.

SUMMARY OF THE INVENTION

This invention is directed, in brief, to the provision of an improved mandrel assembly for paint roller structures.

The best mode currently contemplated by us for carrying out the invention includes a paint roller assembly with a mandrel axle and a pair of normally spaced mandrels thereon. The inboard mandrel is preferably axially slidable along the length of the axle towards the outboard mandrel which is fixed in position on the axle. The outboard mandrel is provided with generally axially extending, and slightly radially enlarged resilient fingers which are intended to normally frictionally engage the interior or core of a replaceable roller cover. These retention fingers terminate in generally axially and radially inwardly extending cam surfaces. The inboard member is provided with finger-locking elements which are intended to ride over the cam surfaces of the outboard mandrel and compress the fingers thereof together slightly thereby causing a reduction in the radial extension thereof to permit the replaceable roller cover to be easily removed from the mandrel assembly.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a paint roller assembly incorporating the improved mandrel construction of this invention;

FIG. 2 is a fragmentary enlarged sectional view of a portion of the paint roller assembly showing the mandrels of this invention in a locked position wherein the inboard mandrel is compressing the locking fingers of the outboard mandrel and the replaceable paint roller sleeve may be easily assembled thereover or withdrawn therefrom;

FIG. 3 is a fragmentary sectional view similar to FIG. 2, but showing the inboard and outboard mandrels disengaged from each other with the replaceable roller sleeve being assembled thereon and the retaining fingers of the outboard mandrel in firm frictional engagement with the interior of the roller sleeves; and

FIG. 4 is a sectional view taken generally along the line 4—4 of FIG. 2.

While this invention is susceptible of embodiment in many different forms, there is shown in the drawings and will herein be described in detail a specific embodiment therefor, with the

understanding that the present disclosure is to be considered as an exemplification of the principles of the invention and is not intended to limit the invention to the embodiment illustrated.

BRIEF DESCRIPTION OF THE PREFERRED EMBODIMENT

Paint roller assembly 10 includes the usual handle 12 and a rod support 14 including an offset connecting portion 16 and a generally transversely extending axle portion 18. A pair of mandrels, such as inboard mandrel 20 and outboard mandrel 22, are rotatably mounted on axle 18 with one of the mandrels being axially slidable relative to the other as will be explained later. The mandrels are intended for supporting a removable sleeve-like roller cover 24 including the rigid core 26 and generally pile-like paint transfer and applying surface 28 which may be made of natural or synthetic fibers.

The inboard mandrel 20 includes a hub 30 having a generally hollow sleeve-like interior 32 of a size and shape to rotatably embrace the axle portion 18. Hub 30 is connected to rear wall 34 which has a cylindrical rim portion 36 integrally joined therewith. The juncture of rim portion 36 with rear wall 34 is reduced relative to the diameter of rear wall 34 at that point resulting in the transverse shoulder 38. Rear wall 34 has offset wall portions 34a spaced well rearwardly of shoulder 38. Rim 36 terminates in an open end 40 and a radially inwardly directed circumferential bead 42 is provided at the open end. A freely slidable washer 44 resides in recessed portion 45 of rear wall 34 to provide a bearing means assisting in the free rotatable mounting of inboard mandrel 20 against an inboard stop (not shown).

The outboard mandrel 22 also has a hub portion 46 with a generally hollow sleeve-like interior 48 generally of a size and shape to rotatably embrace axle 18. In the illustrated embodiment, a washer 50 is positioned between the inboard end of hub 46 and ribs 52 protruding from axle 18 to hold mandrel 22 against movement inwardly of the axle 18. In addition, a fastener 54 is positioned over the free end of axle 18 and abuts the outboard end of hub 46 to hold the hub against movement in the opposite direction. By this arrangement, the mandrel 22 is rotatably mounted on axle 18 and held against any axial movement relative thereto.

A plurality of spaced ribs 56, here shown as four in number, extend from hub 46 to annular rear wall 58 adjacent opening 60 therein. A generally cylindrical rim portion 62 is connected to rear wall 58. This portion is intended to be of reduced diameter relative to the core 26 of a replaceable cover 24 intended to be telescoped thereover. A circumferential groove 64 is formed at the exterior of the juncture of rim 62 and rear wall 58 for receiving the annular inwardly directed bead 66 of a replaceable end cap 68 which is removably associated with the mandrel 22.

The inner or free end of rim 62 is provided with a plurality of axially extending slits 70 providing a plurality of yieldable fingers 72. The outer diameter of each of these fingers increases slightly toward the free ends thereof affording a small outward bevel to the exterior of the fingers 72. It is intended that the bevel would be of a sufficient enlargement to cause the exterior fingers 72 to normally snugly frictionally engage the interior of a core 26 of a replaceable roller cover 24 as best seen in FIG. 3.

Fingers 72 terminate in transverse shoulders 74 which, in turn, terminate in annular seats 76 generally of a size and shape to nestably receive the beads 42 at the free ends of rim 36 of inboard mandrel 20. Each seat 76 returns slightly radially outwardly again and terminates in an axially forwardly and radially inwardly directed bevel or frustoconical cam surface 78.

The theory of cooperation of the two mandrels is that when the inboard mandrel 20 is pushed toward the outboard mandrel 22, the frustoconical cam surfaces 78 of outboard mandrel 22 will cause the free end 40 of rim portion 36 of inboard